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EFFECT OF SUNLIGHT ON PLAGUE BACILLI.

Author.	Condition.	Killed.	Withstood.
			Hours.
Abel.....	In Hamburg, 30 C., thin spreads on cover glasses	1 hour.....	3½
Kitasato.....	Thicker spreads.....	3 to 4 hours..	4
Wilm.....	In Hongkong. Pus from buboes.....	4 hours.....	6
Albrech and Bhon.....	Vienna in August, peritoneal exudate.....	1 hour.....	3
German Pest Commission..	In Bombay, thin layers on glass.....	4 hours.....	8
	thicker layers on glass.....	3 hours.....	2
	silk threads.....	All day.....	24 days.....
	in wool.....	17 days.....	24 days.....
	agar test tube culture.....	13 days.....	23 days.....
Rappoport.....	In St. Petersburg, silk threads, 20 C.....	24 days.....	
	note paper, 20 C.....	17 days.....	
	filter paper, 20 C.....	24 days.....	
	linen thread, 20 C.....	13 days.....	
	woolen thread, 20 C.....	23 days.....	

VIABILITY OF THE ORGANISM IN VARIOUS MEDIA.

Author.	Condition.	Alive.	Dead.
		Days.	Days.
German Plague Commission..	In sputum, 30° to 32° C.....	6 to 10	(a) 8
	In pieces of liver kept in sealed tube.....	7	
	In sterilized feces in thread, fabrics, and paper, 29° C.....	4	
Hankin.....	On seeds, grains, and flours.....		13
Abel.....	In water, distilled and tap.....	20	5
German Plague Commission..	In tap water.....		10
	In distilled water.....		
Yokoto.....	In cadavers of mice, buried.....	20 to 30	

a After 7 days.

Plague in San Francisco.

The following telegraphic communications sent to and received by the Surgeon-General of the U. S. Marine-Hospital Service explain the status of the plague situation in San Francisco from March 8, when first case was announced, until May 21:

ANGEL ISLAND, CAL., *March 8, 1900.*

Case of alleged plague in Chinatown reported. City bacteriologists bring me specimens for examination. Animals inoculated this afternoon. So far no one has obtained history of case. Chinese Six Companies have undertaken investigation previous history suspect.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *March 8, 1900,*
via San Francisco, Cal., March 8, 1900.

History of suspect obtained through Chinese consul and Six Companies shows that case was resident of city sixteen years. Sick since February 7 with specific disease. No developments so far in animals inoculated.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *March 11, 1900.*

Completed examination specimens dead Chinese demonstrates plague. No further history obtainable, evidently ambulant case. Board health with Gassaway had meeting here to-day.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

SAN FRANCISCO, CAL., *March 19, 1900.*

At request board have assisted examination 2 additional cases; suspected plague cultures from 1 shows organism very suspicious; another, autopsied to-day, shows same appearance blood spleen animal inoculations made; cases occurred different parts Chinese quarters; no history obtainable except residents for over year; sick for month; board finally adopts recommendations house-to-house inspection after two weeks delay; has no funds. Suggest officer be returned soon as possible.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *March 23, 1900.*

Under date March 19 telegraphed you the following: "At request board have assisted examination 2 additional cases suspected plague. Cultures from 1 showed organism very suspicious. Another autopsied to-day shows same appearances. Blood and spleen animal inoculation made. Cases occurred in different parts Chinese quarters. No history obtainable except residence for over year, sick for month. Board finally adopts recommendation house-to-house inspection after two weeks' delay. Has no funds. Suggest officer be returned as soon as possible." Another similar case to these reported yesterday; diagnosis, pneumonia. Autopsy does not confirm. Organism suspicious, but must await result inoculation. Rat inoculated from first case referred to, dead thirty-six hours. Examination not yet completed. The new cases can not be traced to foci already located. * * * Further information soon as obtained.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *March 27, 1900.*

At what time can portable sulphur furnace be delivered in San Francisco for purpose of fumigating sewers?

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *April 2, 1900.*

Completed examination of specimens 3 suspected cases plague. Does not show presence of organism.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *April 26, 1900.*

Another case suspected plague discovered yesterday; microscopical examination. Gland shows organism very suspicious; animal inoculation made; suggest immediate shipment portable sulphur furnace.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *May 2, 1900.*

Examination plague suspect completed. Diagnosis confirmed by bacteriological examination. Old resident, no connection traced to first at present. * * *

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *May 13, 1900.*

Have now under investigation 2 additional cases suspected plague; 1 quite suspicious; 1 previously reported May 2 came from Sacramento River.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine Hospital Service.

ANGEL ISLAND, CAL., *May 15, 1900.*

One case referred to May 13 is plague; Chinese girl; long residence; Clay street. Another discovered yesterday; dead May 13; large femoral bubo characteristic organisms; sick five days. Diagnosed typhoid fever by white physicians. Is undoubted plague; now have occurred 4 cases plague in San Francisco, 3 originating in San Francisco, 1 near Sacramento. Regarded now epidemic, as no connection can be traced between cases by local board of health. As requested, secrecy required first case on account of vicious attacks local press. Local board of health now proposes to announce facts to-morrow in joint meeting with editors and merchants association. Will attempt to provide ways and means; have invited me present. Please instruct whether I shall go and how far may I state Service will aid or assist; regard situation very serious. * * * Portable sulphur furnace arrives. Have tendered its use to local board of health. Please wire instructions.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

WASHINGTON, D. C., *May 15, 1900.*

Attend meeting and wire promptly report of it. Ascertain if help is desired of the Service and to what extent. No expenditures can be authorized except under Service officers.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 15, 1900.*

Chinese consul-general, San Francisco, will be wired to use his influence to have the Chinese comply cheerfully with necessary measures and consult with you as the representative of the United States Government. Confer with consul-general. Have about 20,000 Haffkine on hand—will be shipped to-morrow. If Gassaway has any, get it. Suggest advisability of following measures: One man in supreme charge, subordinates in charge of divisions. Cordon of suspected area. Guard ferries and railroad stations with reference to Chinese only. House-to-house inspection with Haffkine inoculation. Chinatown to be districted. Pest hospital in Chinatown, using some substantial building. Suspects from plague houses to be removed to a suspect house in Chinatown, or,

May 25, 1900

1256

if you deem necessary, to Angel Island. A disinfecting corps. Destruction of rats. Inspection of railroads and outside territory.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 15, 1900.*

The law of 1890 holds good, and can be applied.

WYMAN.

KINYOUN, *Angel Island, Cal.*

ANGEL ISLAND, CAL., *May 17, 1900.*

At joint meeting held by local board of health and merchants' association and representatives Chinese Six Companies, was decided to have further conference with representatives of Chinese to-day for purpose of perfecting plans of operation. Your telegram discussed and main features recommended for adoption. Local board of health desires to do the work itself and believes it can have funds furnished it for this purpose. Have offered to assist in every way possible, but have not made any tender of funds. Believe the work of guarding outlying districts will be necessary, and will devolve upon the Service to carry this out. Will ascertain to-day attitude of health authorities in surrounding towns, and what measures can be carried out there. Believe great danger lies in fact of exodus, which will necessarily occur as soon as house-to-house inspection begins. Shall I visit Stockton and find out whether disease exists there? Can do so now within next two days, as no vessels are due. One case plague dead May 16, reported to have arrived two days before from Stockton. Have not been able to ascertain complete history.

KINYOUN.

The SURGEON GENERAL,
U. S. Marine-Hospital Service.

WASHINGTON, D. C., *May 17, 1900.*

Nominate 2 good acting assistants for train inspection, 1 at Reno and 1 as near Oregon border as practicable. Send them at once to places indicated to await orders. Have sent similar dispatch to Cofer for southern routes. Suggest McQuesten as 1 inspector. Answer immediately.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 17, 1900.*

Nominate 2 acting assistants for train inspection, 1 each on Santa Fe and Southern as near Arizona border as practicable. Send them there immediately to await orders. Authorized to personally inspect locations if necessary. Wire action. Acknowledge.

WYMAN.

Assistant Surgeon COFER,
Marine-Hospital Service, Los Angeles, Cal.

WASHINGTON, D. C., *May 17, 1900.*

Visit Stockton and other places if necessary. With regard to surrounding towns, suggest getting in touch with State board. Will send you some good additional junior officers. Expressed 2,000 Haffkines yesterday, 3,000 to-day, and 15,000 in the three following days. Authorized to employ such acting assistants as may be necessary,

wiring compensations and submitting regular nominations promptly by mail.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 17, 1900.*

Bureau thinks that on account case reported March 8 advisable to carefully inspect and keep under surveillance any Chinese arriving from San Francisco.

WYMAN.

HARRIS, *Quarantine Officer, Eureka, Cal.*

Same telegram was sent to Frary, quarantine officer, Hoquiam, Wash.

WASHINGTON, D. C., *May 17, 1900.*

Five plague San Francisco. Make it reason for any restrictive measures that there has been a case of plague at San Francisco March 8.

WYMAN.

FOSTER, *Quarantine, Port Townsend, Wash.*

Same telegram has been sent to quarantine officers Astoria, Oreg., Los Angeles and San Diego, Cal.

WASHINGTON, D. C., *May 18, 1900.*

Relieved from duty at Detroit, proceed immediately to San Francisco; report to Kinyoun for duty. Transportation will be wired to-morrow. Ship personal effects through quartermaster.

WYMAN.

EARLE, *through commanding officer,
Marine-Hospital Service, Detroit, Mich.*

WASHINGTON, D. C., *May 18, 1900.*

Inspect carefully the Chinese and Chinese baggage. Hold them for observation if necessary.

WYMAN.

FOSTER, *Port Townsend, Wash.*

WASHINGTON, D. C., *May 18, 1900.*

Instruct Wilson to report immediately to Kinyoun for duty. Authorized to nominate temporary acting assistant.

WYMAN.

GASSAWAY, *Marine-Hospital, San Francisco, Cal.*

WASHINGTON, D. C., *May 18, 1900.*

Relieved from duty Chicago; proceed immediately San Francisco; report to Kinyoun for duty. Transportation will be wired to-morrow. Ship personal effects through quartermaster.

WYMAN.

LLOYD, *through commanding officer,
Marine-Hospital Service, Chicago, Ill.*

MAY 18, 1900.

Envoyez grande vitesse virus Danysz, cinquante cultures en gelose ou deux litres culture en bouillon.

WYMAN.

ROUX, *Institut Pasteur, Paris.*

May 25, 1900

1258

[Translation.]

MAY 18, 1900.

Send by express 50 agar cultures or 2 litres bouillon culture virus Danysz.

WYMAN.

ROUX, *Institut Pasteur, Paris.*

ANGEL ISLAND, CAL., *May 19, 1900.*

The local board of health officially states the existence of plague in San Francisco. Has requested the State board to act. Have requested me to notify transportation lines, and have taken steps to prevent exodus. Will commence house-to-house inspection to-day, and attempt Haffkine. Will have trouble to enforce law, as residents of San Francisco are being advised to resist by certain whites. Consul-general and Six Companies are in accord with Bureau telegram. Have notified transportation company of situation, and requested them to comply. Respectfully suggest that I be empowered to enforce the law of 1890. In event of refusal, will be requested by the State board to assume charge of this inspection. Will appoint necessary inspectors as fast as possible and assign them to duty and outlying districts. Impossible to nominate inspectors for Reno and Oregon borders yesterday, because I was absent in Stockton. Will do so to-day.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *May 19, 1900.*

Am able to act as Bureau representative for Pacific coast if sufficient number of officers are sent me. Have advised board of health not to insist on compulsory vaccination, but rather a quarantine cordon instead, allowing no one to leave infected area until vaccination accomplished. Believe can overcome obstacles within a short time.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

ANGEL ISLAND, CAL., *May 19, 1900.*

Health office attempt to make inspection of Chinatown with 40 inspectors and few police; all Chinatown is closed. Impossible to gain access to houses; so far no one inoculated. There is a preconceived resistance on part of Chinese against inspection. Consul-general and Six Companies powerless to enforce demands or to cooperate. * * * Have instructed railroad lines to refuse passage to Chinese or Japanese desiring to leave San Francisco. Exodus has begun. Find it quite difficult to procure proper medical inspectors. Have secured service of McQuesten for Fresno and will supply inspector for Oregon border to-day. Wilson reports for duty this morning. Another case suspected plague found last night, dead several days.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

WASHINGTON, D. C., *May 19, 1900.*

Instruct your inspectors at the Needles and Yuma to begin inspection of trains and prevent exit from State of Chinese or Japanese, unless

accompanied by certificate of Marine-Hospital officer. Notify Kinyoun, San Francisco.

WYMAN.

COFER, *Marine-Hospital Service, Los Angeles, Cal.*

WASHINGTON, D. C., *May 19, 1900.*

Await further orders before proceeding to Hongkong. In the meantime report to Kinyoun for duty.

WYMAN.

KERR, through KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 19, 1900.*

Advise that you use tact and discretion in enforcing Haffkine inoculation of Chinese and be not too precipitate or harsh. End will be more certainly and easily gained. As to whites interfering, notify them interference will make them equally liable with open violators of the regulations to the penalties imposed by section 1, act of Congress March 27, 1890.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 19, 1900.*

Direct your inspectors at Reno and Oregon border to allow no Chinese or Japanese to pass out without certificate from Marine-Hospital Service. Cofer directed to give same orders to inspectors at Needles and Yuma, and to notify you; notify State board health.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 19, 1900.*

It is suggested here it would materially influence the Chinese if some whites were vaccinated.

WYMAN.

KINYOUN, *Angel Island, Cal.*

SAN FRANCISCO, CAL., *May 20, 1900.*

Board of health continues attempt at house-to-house inspection offering inoculation. All houses still closed. Japanese desiring to leave city are availing themselves Haffkine prophylactic. Only one Chinese inoculated to-day. So far no cordon around infected area. No provisions made for detention of suspects nor for hospital. Have asked War Department whether temporary use could be had for detention camp near station. Had conference with consul and representative Chinese to-day, in which they request information regarding law for action contained in telegram directing me, request transportation companies refusal tickets Chinese and Japanese. Respectfully suggest that would be better to all parties concerned to confer full powers on me to order transportation companies and others rather than a request. Believe Chinese intend testing matter in court. No serious friction exists between myself and Chinese authorities; all directed toward the local board of health. Have advised caution, and believe with good effect. Have appointed inspectors for Reno and Ashland; both on way. Have instructed them according to Bureau telegram. Please wire them fully further instructions. Have been suggested inspector required at Nogales. Have appointed to-day 7 inspectors, assigning them duty at points of exit. Will extend guard line to-morrow. Have

notified health authorities adjacent towns to look out and apprehend any Chinese or Japanese arriving without proper certificate. Have assigned Kerr work regarding vessels leaving port. Suspected case plague reported May 13 proves genuine. People here absolutely in dark as to correct situation, on account of local papers refusing publishing any matter pertaining to epidemic. State board of health meet here to-morrow evening.

KINYOUN.

The SURGEON-GENERAL,
U. S. Marine-Hospital Service.

WASHINGTON, D. C., *May 21, 1900.*

By direction of the President, Secretary of Treasury has promulgated the following regulations under act of Congress March 27, 1890:

First, during the existence of plague at any point in the United States the Surgeon-General, Marine-Hospital Service, is authorized to forbid the sale or donation of transportation by common carriers to Asiatics or other races liable to the disease. Second, no common carrier shall accept for transportation any person suffering with plague, or any article infected therewith, nor shall common carriers accept for transportation any class of persons who may be designated by the Surgeon-General of the Marine-Hospital Service as being likely to convey the risk of plague contagion to other communities and said common carriers shall be subject to inspection. End of quote. Inform transportation companies and direct them, under above regulations, to refuse transportation to Asiatics except on your certificate and instruct border inspectors to inspect trains and prevent Asiatics leaving State without your certificate.

WYMAN,
Surgeon-General Marine-Hospital Service.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 21, 1900.*

Full regulations of Secretary Treasury, by direction of President, under law of 1890 requiring common carriers to refuse Asiatics and authorizing train inspections, will be wired you about 10 to-night, Washington time.

WYMAN.

KINYOUN, *Angel Island, Cal.*

WASHINGTON, D. C., *May 21, 1900.*

Acting Assistant Surgeon Jenkins, U. S. M. H. S., Needles, Cal.

Acting Assistant Surgeon McQuesten, U. S. M. H. S., Reno, Nev.

Acting Assistant Surgeon Mitchell, U. S. M. H. S., Yuma, Ariz.

Acting Assistant Surgeon McGeer, U. S. M. H. S., Ashland, Oreg.

Inspect all trains leaving California. Examine carefully all Chinese and Japanese. If not satisfied from locality free from plague and entirely free from it themselves, prevent their leaving State. Further instructions to prevent all Asiatics from passing out the State without certificate of United States Marine-Hospital Service will be wired you by Surgeon Kinyoun to-morrow.

WYMAN,
Surgeon-General.